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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/638,237

08/07/2003

Raymond Browning

3145P

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25271

7590

11/27/2006

GALLAGHER & LATHROP, A PROFESSIONAL CORPORATION  
601 CALIFORNIA ST  
SUITE 1111  
SAN FRANCISCO, CA 94108

EXAMINER

SINGH, RAMNANDAN P

ART UNIT

PAPER NUMBER

2614

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/638,237	<b>Applicant(s)</b> BROWNING ET AL.	
	<b>Examiner</b> Ramnandan Singh	<b>Art Unit</b> 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 4-12, 23, 25-30, 32-42 and 47-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-12, 23, 25-30, 32-42, 47-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 23, 25-26, 28-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Saint [GB 2254464 A].

Regarding claim 23, Saint teaches a process for generating a signal to drive a sound transducer in an audio reproduction system shown in Fig. 1, the process comprising:

receiving an audio signal at a first input (i.e. first drive signal) of a control circuit (13), wherein the control circuit is configured according to a model of the sound transducer (17) [Page 2, lines 9-24];

receiving a signal indicative of a state of the sound transducer (17) at a second input (second drive signal) of the control circuit (13), wherein the state is a relative position of a movable portion of the sound producing transducer with respect to another portion of the sound producer [Page 2, lines 9-24]; and

utilizing the control circuit to generate an output signal to drive the sound transducer, wherein the output signal is responsive to the signal indicative of a state of the sound transducer and the audio signal [Fig. 1; Page 7, line 8 to Page 9, line 4].

Regarding claim 25, Saint further teaches the process that comprises generating the position signal (i.e. detection signal ) indicative of state of using an electrical characteristic of the system [Fig. 1].

Regarding claim 26, Saint further teaches the process, wherein the sound transducer (17) may take any form including a coil and the electrical characteristic is an impedance of the coil [ Page 4, lines 21-27].

Regarding claim 28, Saint further teaches the process, wherein the signal comprises the signal indicative of state is generated optically (i.e. using visible light) [Page 4, lines 14-15; Page 6, lines 22-26].

Regarding claim 29, Saint further teaches the process, wherein the signal indicative of state is generated using light directed from an infrared light source to the movable portion of the sound transducer (17) [Page 4, lines 2-14; col. 7, lines 8-27].

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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4. Claims 4, 6 and 49 rejected under 35 U.S.C. 103(a) as being unpatentable over Saint as applied to claim 23 above, and further in view of Stich [US 5,789,691].

Regarding claim 4, Saint does not teach expressly using a back electromotive force (i.e. counter-EMF) to condition an audio signal.

Stich teaches using the control circuit to condition an audio signal as a function of a back electromotive force of a driver of the sound transducer [col. 8, line 39 to col. 9, line 4].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Stich with Saint in order to reduce the effect of the back EMF on a coil [Stich; col. 8, lines 53-56].

Claims 6 and 49 are essentially similar to claim 4 and are rejected for the reasons stated above.

5. Claims 5, 7-12, 27, 32-37, 39-42, 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saint as applied to claim 23 above, and further in view of Lawson [US 4, 914,750].

Regarding claim 12, Saint does not teach a speaker transducer having a coil and diaphragm assembly.

Lawson teaches a sound transducer comprising a speaker transducer having a coil and diaphragm assembly [Figs. 20-25; col. 8, line 44 to col. 9, line 25].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Stich with Saint in order to improve the frequency response of the speaker [Stich; col. 8, lines 3-25].

Regarding claim 39, the combination of Saint and Lawson teaches the process, wherein the sound transducer comprises a coil and a diaphragm [Lawson; Figs. 20-25; col. 8, line 44 to col. 9, line 25], and wherein the coil is the movable portion of the sound transducer and the model comprises an operational parameter (i.e. motor factor of a driver) of the sound transducer as a function of the relative position of the coil with respect to another position of the sound producer [Lawson; Figs. 32-33; col. 10, lines 16-32].

Regarding claim 5, Lawson further teaches using the control circuit responsive to an impedance of a driver of the sound transducer [col. 10, line 61 to col. 11, line 2].

Claims 7, 40, 50 are essentially similar to claim 5 and are rejected for the reasons stated above.

Regarding claim 8, Lawson further teaches using the control circuit is responsive to a motor factor of a driver of the sound transducer [Figs. 32-33; col. 10, lines 16-32].

Claims 10 and 41 are essentially similar to claim 8 and are rejected for the reasons stated above.

Regarding claim 9, Lawson further teaches the process using the control circuit is responsive to spring stiffness of a spring support (40) of the sound transducer [Fig. 3; col. 5, lines 43-52].

Claims 11 and 42 are essentially similar to claim 9 and are rejected for the reasons stated above.

Regarding claims 27, 32-37, the limitations are shown above.

6. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saint as applied to claim 29 above, and further in view of Crimmins [US 4,757,553].

Regarding claim 30, since Saint teaches an infra-red detector to detect a position

of a moving object [Page 4, lines 2-20], one of ordinary skill in the art would have been motivated to seek an infra-red emitting source for the detector, such as an infrared light emitting diode of Crimmins.

Crimmins teaches using an infrared light emitting diode as a detector [Fig. 4; col. 3, lines 42-54; col. 4, lines 20-28; col. 4, line 67 to col. 5, line 20; col. 5, lines 46-66].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Crimmins with Saint in order to make and use the claimed invention of Saint.

7. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Saint and Lawson as applied to claim 37 above, and further in view of Crimmins [US 4,757,553].

Regarding claim 38, since Saint teaches an infra-red detector to detect a position of a moving object [Page 4, lines 2-20], one of ordinary skill in the art would have been motivated to seek an infra-red emitting source for the detector, such as an infrared light emitting diode of Crimmins.

Crimmins teaches using an infrared light emitting diode as a detector [Fig. 4; col. 3, lines 42-54; col. 4, lines 20-28; col. 4, line 67 to col. 5, line 20; col. 5, lines 46-66].



At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Crimmins with Saint and Lawson in order to make and use the claimed invention of Saint.

8. Claims 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saint as applied to claim 23 above, and further in view of Klayman et al [US 5,912,976].

Regarding claim 47, Saint does not teach expressly the process, wherein the audio reproduction system comprises a signal conditioning portion and a sound conditioning portion.

Klayman et al teach an audio reproduction system comprises a signal conditioning portion and a sound conditioning portion [Figs. 1-6; col. 3, lines 11-33; col. 7, lines 7-31].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Klayman et al with Saint in order to produce a more realistic immersive sound experience when the processed signals are acoustically produced [Klayman et al; col. 7, lines 18-21].

Regarding claim 48, the limitations are shown above.

### ***Response to Arguments***

9. Applicant's arguments filed Sep. 11, 2006 have been fully considered but they are not persuasive. Further, the Applicant's arguments are moot in view of the new ground(s) of rejection.

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

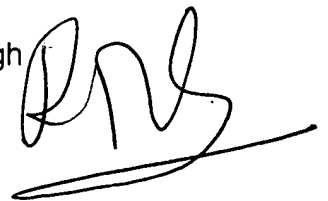
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramnandan Singh  
Examiner  
Art Unit 2614



FAN TSANG  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600